

## AMENDMENTS TO THE CLAIMS

### Claims 1-5 (Cancelled)

**Claim 6 (Currently Amended)** A peritoneal function testing method comprising:

providing a computation unit;

obtaining data of a dialysis patient using the computation unit;

~~a 1st computation step of obtaining data of a dialysis patient using a computation unit and~~  
obtaining individual initial estimate values for (i)  $MTAC_{glc}$ ,  $MTAC_{un}$ , and  $MTAC_c$  by using the obtained data and a processor of the computation unit to compute a Pyle-Popovich model, and  
(ii) a  $LpS_C/LpS$  ratio by using  $LpS_C$  and  $LpS$ , where  $MTAC_{glc}$  is an overall mass transfer-area coefficient for glucose,  $MTAC_{un}$  is an overall mass transfer-area coefficient for urea nitrogen,  $MTAC_c$  is an overall mass transfer-area coefficient for creatinine,  $LpS_C$  is a permeability coefficient for cell pores, and  $LpS$  is an overall permeability coefficient;

a 2nd computation step, following the 1st computation step, of using the computation unit to (i) obtain computation results by computing a Three-Pore Theory model using the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{un}$ , the  $MTAC_c$ , and the  $LpS_C/LpS$  ratio obtained by the 1st computation step, and (ii) calculate an optimal solution of the computation results obtained by computing the Three-Pore Theory model, the optimal solution being calculated using a Genetic Algorithm; and

using a  $MTAC_{un}/MTAC_c$  ratio, which is calculated using an optimal  $MTAC_{un}$  and an optimal  $MTAC_c$  determined using the optimal solution, as an index for a peritoneal function test.

**Claim 7 (Previously Presented)** The peritoneal function testing method of Claim 6, wherein

in the 1st computation step including the computing of the Pyle-Popovich model, solute concentration values for the glucose, the urea nitrogen, and the creatinine are individually calculated as approximation solutions of linear differential equations.

**Claim 8 (Previously Presented)** The peritoneal function testing method of Claim 7, wherein the  $MTAC_{un}/MTAC_c$  ratio and a volume of water removal are used as indexes for the peritoneal function test.

**Claim 9 (Previously Presented)** The peritoneal function testing method of Claim 8, wherein a correlation between the  $MTAC_{un}/MTAC_c$  ratio and the volume of water removal is used as an index for the peritoneal function test.

**Claims 10-17 (Cancelled)**

**Claim 18 (Currently Amended)** A peritoneal dialysis planning apparatus comprising:

a processor;

a memory;

a computation unit ~~programmed-operable~~ to (i) obtain data of a dialysis patient and store the obtained data in the memory, (ii) obtain individual initial estimate values for  $MTAC_{glc}$ ,  $MTAC_{un}$ , and  $MTAC_c$  by using the obtained data and the processor to compute a Pyle-Popovich model and for a  $L_P S_C/L_P S$  ratio by using  $L_P S_C$  and  $L_P S$ , where  $MTAC_{glc}$  is an overall mass transfer-area coefficient for glucose,  $MTAC_{un}$  is an overall mass transfer-area coefficient for urea nitrogen,  $MTAC_c$  is an overall mass transfer-area coefficient for creatinine,  $L_P S_C$  is a permeability

coefficient for cell pores, and  $L_P S$  is an overall permeability coefficient, (iii) obtain computation results by computing a Three-Pore Theory model using the processor and the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{un}$ , the  $MTAC_c$ , and the  $L_P S_C/L_P S$  ratio, (iv) calculate, using the processor and a Genetic Algorithm, an optimal solution of the computation results obtained by computing the Three-Pore Theory model, and (v) calculate a  $MTAC_{un}/MTAC_c$  ratio using the processor, an optimal  $MTAC_{un}$  determined using the optimal solution and an optimal  $MTAC_c$  determined using the optimal solution; and

an output unit operable to output the  $MTAC_{un}/MTAC_c$  ratio as an index for a peritoneal function test.

**Claim 19 (Previously Presented)** The peritoneal dialysis planning apparatus of Claim 18, wherein during the computation of the Pyle-Popovich model, the computation unit calculates individual solute concentration values for the glucose, the urea nitrogen, and the creatinine, as approximation solutions of linear differential equations.

**Claim 20 (Previously Presented)** The peritoneal dialysis planning apparatus of Claim 18, wherein a correlation between (i) the  $MTAC_{un}/MTAC_c$  ratio calculated using the optimal  $MTAC_{un}$  and the optimal  $MTAC_c$  and (ii) a volume of water removal, is presented in a graph that is output to the output unit.

**Claim 21 (Previously Presented)** The peritoneal dialysis planning apparatus of Claim 20, wherein the output unit is a display unit, and

wherein the display unit outputs the correlation by displaying a distribution of plotted actual measurements of multiple patients and a regression line for the distribution.

**Claim 22 (Previously Presented)** The peritoneal dialysis planning apparatus of Claim 18, wherein the output unit outputs one of the  $MTAC_{un}/MTAC_c$  ratio calculated using the optimal solution and the  $L_P S_C/L_P S$  ratio calculated using the optimal solution, which is plotted in a two axis coordinate system together with a volume of water removal.

**Claims 23-31 (Cancelled)**

**Claim 32 (Previously Presented)** A computer-readable recording medium having a peritoneal function testing program recorded thereon, the peritoneal function testing program causing a computer to execute a peritoneal function testing method comprising:

a 1st computation step of obtaining data of a dialysis patient using a computation unit and obtaining individual initial estimate values for (i)  $MTAC_{glc}$ ,  $MTAC_{un}$ , and  $MTAC_c$  by using the obtained data and a processor of the computation unit to compute a Pyle-Popovich model, and (ii) a  $L_P S_C/L_P S$  ratio by using  $L_P S_C$  and  $L_P S$ , where  $MTAC_{glc}$  is an overall mass transfer-area coefficient for glucose,  $MTAC_{un}$  is an overall mass transfer-area coefficient for urea nitrogen,  $MTAC_c$  is an overall mass transfer-area coefficient for creatinine,  $L_P S_C$  is a permeability coefficient for cell pores, and  $L_P S$  is an overall permeability coefficient;

a 2nd computation step, following the 1st computation step, of using the computation unit to (i) obtain computation results by computing a Three-Pore Theory model using the individual initial estimate values for the  $MTAC_{glc}$ , the  $MTAC_{un}$ , the  $MTAC_c$ , and the  $L_P S_C/L_P S$  ratio obtained

by the 1st computation step, and (ii) calculate an optimal solution of the computation results obtained by computing the Three-Pore Theory model, the optimal solution being calculated using a Genetic Algorithm; and

using a  $MTAC_{un}/MTAC_c$  ratio, which is calculated using an optimal  $MTAC_{un}$  and an optimal  $MTAC_c$  determined using the optimal solution, as an index for a peritoneal function test.

**Claim 33 (Previously Presented)** The computer-readable recording medium of Claim 32, wherein the peritoneal function testing method includes, during the 1st computation step including the computing of the Pyle-Popovich model, calculating individual solute concentration values for the glucose, the urea nitrogen, and the creatinine, as approximation solutions of linear differential equations.

**Claim 34 (Previously Presented)** The computer-readable recording medium of Claim 32, wherein the peritoneal function testing method includes using the  $MTAC_{un}/MTAC_c$  ratio and a volume of water removal as indexes for the peritoneal function test.

**Claims 35-45 (Cancelled)**